Tab B Return on Investment Program Funding Application For FY 13

Contact Information:

_x__ IT Enterprise Solution project

Date: 8/31/2011
Agency Name: Iowa DNR
Project Name: GIS Services for State Agencies – Phase 2
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Executive Sponsor (Agency Director or Designee): Rick Hindman

Amount of Funding Requested: _$495,000_____
Section I: Project Name: GIS Services for State Agencies – Phase 2

Description: DNR will continue to administratively support two contract GIS professional positions for an additional two years whose purpose is to assist state agencies in the use of GIS, so as to become more proficient with GIS technology in daily business processes, and to increase coordination between state agency GIS efforts. The entire state agency GIS build-up effort is projected to run a total of 5 years with 2 2-year Pooled Technology grant applications in FY10 (in progress) and FY12 (this current application), and a fifth year with funding from a sustainable source. In this second application, we are asking for $120,000/yr for contract staff salary, benefits and contracting costs through Iowa State University's GIS Facility, for two years, for a total of $240,000. Funding for this phase will cover January 2013 through December 2014.

In addition, we are requesting $255,000 to complete 22 remaining counties for the Iowa Geocoding Project. The first Pooled Technology grant of $650,000 is nearing completion of 50 counties in western Iowa, building a geocoding web service and providing training to state agencies (current phase of project in progress until December 2011). The second application in FY11 requested an additional $550,000 to complete the remaining 49 counties in eastern Iowa. However, this project was only funded at $194,000 and is projected to only complete 27 smaller counties of the remaining 49. This partially funded project will begin in January 2012 and run through December 2012. With this application, we are making a third request for an additional $255,000, which will cover the period from January 2013 and end in July 2014, and finish the remaining 22 counties, including 5 densely populated counties (Linn, Johnson, Black Hawk, Dubuque and Scott), which take longer to complete.

Therefore, our total request for ROI/Pooled Technology Funding is $495,000 for continuation of the GIS services for state agencies, and completion of the geocoding project.

The ultimate goal of GIS in government use is to make better decisions, whether that is re-engineering internal workflows, improving customer access to information, or making better decisions regarding the management of resources (ie. the environment, mental health care, school lunch programs, etc.). GIS services provided by this project will include direct assistance to individual agency projects and staff, coordination between state agencies, and interaction with the external GIS community so that ideas and resources are shared between

all sectors within the state. This will ultimately save the state money through avoided costs of having to recreate critical databases, increased efficiency in finding extent data and reformatting to internal requirements, greater coordination of large data acquisitions, and creation of new capabilities for public access to government information (such as web mapping services) that were not possible without GIS technology.

Initial efforts of the State Agency GIS Services staff include interviewing state agency personnel as to their current use of GIS, and collecting needs for GIS data, software/hardware and training. Already significant patterns of need for certain types of data, training and assistance are beginning to emerge, pointing out directions for future efforts in the near term. It is planned to complete the needs assessment phase in January 2012, and develop a plan for addressing priorities identified and discussed by the state agency GIS Steering Committee. This business plan will guide efforts for the remainder of the project including joint data development, training, user assistance and web mapping application development. Some initial findings from the interviews include:

- Address points created by the Geocoding Project are needed to help locate potential foster homes for Human Services, to split school districts that are consolidating, and to direct emergency services for the Next Generation 911 system being planned by HSEMD. DNR is using these address points to locate structures in floodplains, and HSEMD is using them to assess damages in the 5 counties affected by the Missouri River flood of 2011.
- TIF districts and tax districts are needed by Revenue, Economic Development and Legislative Services Agency, both of which require data from local governments and on-going relationships to keep boundaries current.
- Utility infrastructure and service areas are needed by Iowa Utility Board, HSEMD, Public Safety and Economic Development
- Training is a common theme among all those interviewed. Many staff end up taking hours doing simple tasks and rarely use new tools, or using GIS to develop new ideas (like helping doctors know if they are located within special in-need health care zones that provide college loan repayments worth $10,000s)
- In one meeting different users in the same department introduced themselves to each other (state agency GIS user group will be meeting later this fall)
- Low hanging fruit includes putting non-confidential agency GIS layers in a “library” so that others in the same agency have access (GIS data clearinghouse and metadata training this fall); includes data discovery through the Iowa Geospatial Data Clearinghouse and metadata creation assistance.
- Many said “interactive maps would be great!” (DNR, DOT and HSEMD continue efforts to create GIS web services using ITE SOA framework to build interactive maps more easily)

Section II: Expected Results GIS Services

Participating state agencies will derive the following benefits from this project by deeper integration of GIS within their agencies, and coordination with other state agency GIS projects:

1. operational improvements - organizational decision making will be improved when GIS is incorporated at the program level within a state agency. GIS facilitates the recognition of spatial relationships that otherwise go un-noticed, thus providing clearer options, or more

alternatives during decision making

2. service to customers - if all stakeholders have the same information readily available in map form, concensus is achieved earlier in the process. Agency information in GIS form stored in publicly available data libraries or web applications, can be provided quicker to contractors, reducing their data acquisition costs, which frequently get passed back as savings to contracting government agency

3. process improvements - if stakeholders have access to relevant information sooner in the design or regulatory cycle, they can avoid costly mistakes sooner in the process, or avoid a lengthy review phase.

4. mandate and/or compliance improvements - through a combination of the above cost reductions and efficiencies made possible by GIS use, agencies can focus more resources on mandates, or through less effort for traditional mandates, apply savings to address emerging public issues before they require extensive remedial legislative action (ie. agencies can be more proactive).

5. cross-agency participation - by its nature this is cross-agency, enterprise solution project, with greater benefits accruing when agencies coordinate and share the cost of GIS projects. By having two dedicated staff whose duties include facilitating coordination and communication between agencies, this becomes an active underlying component of any GIS project attempted during the grant period and after.

Section III: Financial Analysis GIS Services

Estimated costs and benefits during 5 years of this project - We are applying for two additional years of funding to cover the period from January 2013 until December 2014. The project sponsors will find sustainable funding in year 5, starting in 2015, and beyond.

Tangible benefits are estimated for five categories of services provided to 4 groups of state agencies. Because the project emphasis is to increase GIS usage in state government, services to DOT and DNR (group 1 - Big GIS programs) will be limited, due to their already extensive investments in GIS. Group 2 agencies, Public Health, Homeland Security and Emergency Management, and Agricultural and Land Stewardship have been using GIS for several years, and usually have one person designated a GIS coordinator for the agency. They will receive full services, along with Group 3, agencies with small or beginning GIS programs. These include Public Safety, Education, Human Services, Workforce Development, Utilities Board, Economic Development and Cultural Affairs. GIS projects in other states show that huge benefits are possible for these public service-oriented agencies. Group 4 is composed of agencies that do not appear to have any current GIS projects, but have potential for substantial benefits if adopted. Our GIS services staff will contact these agencies during the course of the project and provide information on starting a GIS, if interested. We estimate that at least 3 of these agencies may be willing to initiate a pilot GIS project.

The following **Table 1** lists agency groups versus GIS services offered by our project staff. Using data from IGIC's IGI return on investment project completed in 2008, we have estimated average tangible benefits for each service, multiplied by the number of agencies who will likely use that service to calculate total financial benefits created by this project.

Table 1 - Return on investment benefits by GIS service type and agency group.

Agency	Do I need GIS in my Agency? Do I need GIS in my Program?	Formal GIS Training	GIS Consulting and Contracting Assistance	GIS Data Management, Cartographic, and Analytical Services	GIS Application Development (including web mapping)	Finding GIS Data from Other Sources (includes conversion and reformatting)
Big GIS Programs - DNR, DOT		XX				XX
Medium GIS Programs - Health, HLSEM, Ag		XXX	XXX	XXX	XXX	XXX
Small GIS Programs - DPS, DED, Revenue, Ed., DHS, IWD, IUB, DCA		XXXXXXXX	XXXXXXXX	XXXXXXXX	XXXXXXXX	XXXXXXXX
Agencies with No Known GIS Program - DIA, Civil Rights, Elder Affairs, Parole, Corrections, Management, Sec. of State	XXXXXXX	Estimate 3 agencies will start GIS within 5 year project timeframe	XXX	XXX	XXX	XXX
UNIT BENEFIT per agency	0	$2k/yr	$5k/yr	$10k/yr	$5k/yr	$10k/yr
Total Yearly Benefit	0	16 agencies * $2k benefit = $32k total	14 * $5k = $70k	14 * $10k = $140k	14 * $5k = $70k	16 * $10k = $160k

Estimated total yearly benefit is $472,000. We estimate these benefits will ramp up to the full amount over 4 years. First year benefits will 25% of the total, second year 50%, third year 75% and fourth year 100%. See the enclosed spreadsheet.

This financial analysis does not include benefits to external customers, only customers within state government. Local and federal government, Iowa businesses and the general public will all benefit by increased access to state program information through this project. Any GIS services provided to HLSEM will benefit all counties and cities in Iowa

Enterprise-wide value: This project, the JCIO geocoding service and other GIS spatial data production (such as lidar and ortho-imagery) are all part of a larger concept called the Iowa Geospatial Infrastructure (IGI) that consists of high-quality statewide GIS datasets collected from state and local GIS data producers, and made available to all users free of charge through the Internet. IGI will provide a much-needed alternative to the current patchwork of incomplete GIS data coverage and services statewide. The Iowa Geographic Information Council (IGIC) recently completed in 2008 a return on investment study of the IGI. The ROI study shows a positive net present value (benefits minus costs) of $271 million over 20 years. A complete copy of the study can be found here: http://www.iowagic.org/about/projects-and-initiatives/igi/documents/. A second ROI study of GIS use during the Flood of 2008 showed that widespread adoption of GIS and other geospatial technologies during and following emergencies (including the IGI), increases the net present value by an additional $550 million, again over 20 years. Flood 2008 ROI documents are here: http://www.iowagic.org/igi/2008-flood-gis-roi-study.

Section IV: Auditable Outcome Measures GIS Services

For each of the following categories, list the auditable metrics for success after implementation and identify how they will be measured.

Tangible and intangible benefits as follows:

1. Decision Making using GIS will be tracked as intangible benefits, and wherever possible estimates will be made of avoided costs from alternate decisions.
2. Service to customers can be tracked as a tangible benefit through number of hits on an agencies GIS web mapping site, along with foot traffic or telephone calls at public counter space. Local government experience with web mapping sites shows they can decrease foot traffic by up to 60%.
3. Cost savings come from avoided costs of agencies hiring project or contract GIS staff to perform routine GIS services, purchasing web servers, and finding/converting external data. Tracked through GIS project staff hours on each agency project.
4. Project re-engineering will can be tracked in agency data collection efforts, or through regulatory or permit workflows. Track permit hours with GIS versus without.
5. Source of funds (Budget %) General Fund 0% External Funding 20% (year 5) Pooled Technology 80% (years 1-4)

Bonus Section: Agencies Affected By GIS Services and Geocoding Project

State agencies directly impacted by the GIS Services and Geocoding project: 18 - Natural Resources, Agriculture and Land Stewardship, Public Defense (HSEMD), Public Safety (State Police), Transportation, Revenue, Economic Development, Workforce Development, Commerce (IUB), Cultural Affairs, Legislative Services, Attorney General, Administrative Services, Regents, Public Health, Education, ICN, Human Services

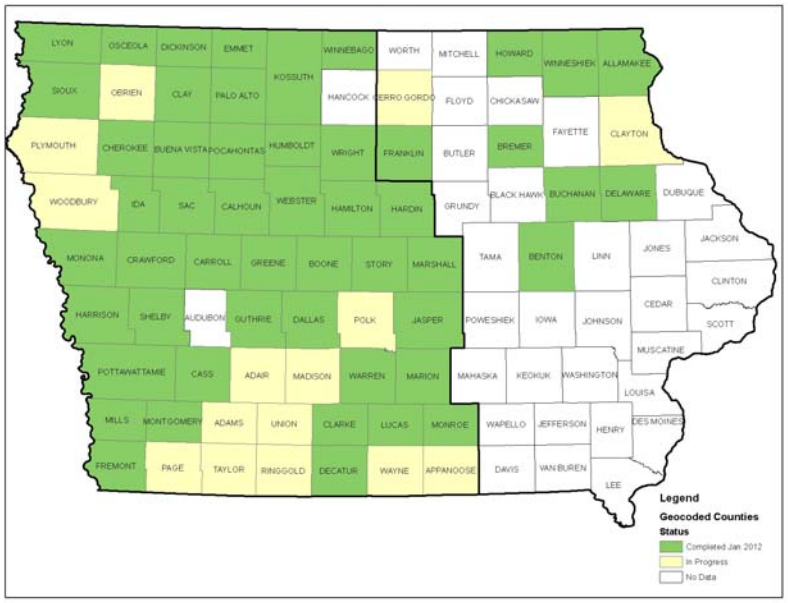
State Agencies potentially/indirectly impacted: 5 - Secretary of State, Management, Inspections and Appeals, Aging, Human Rights

Levels of government directly impacted by GIS Services and Geocoding project: 5 total - all levels use GIS data produced by state agencies through these projects - federal (EPA, FEMA, NRCS, FSA, USGS, USFWS), state (see above list), county (assessor, auditor, conservation, planning, engineer, health), cities (engineer, health, sanitation, planning), regional planning commissions or COGs (transportation, housing, infrastructure planning)

Attachment 1 - Geocoding Project Update:

The Geocoding part of the grant application will complete the development of a repository of validated address point locations and building/structure points, delivered through ESRI ArcGIS Server technology, which is currently used by DNR, DHS, DOT and DPD/HLSEM. Address locations are extracted from county GIS parcel data, where available, and moved to driveway and building locations using aerial imagery. Using U.S. Postal Service address validation web tools, the address strings are corrected, standardized and validated for mail delivery and compared to local address data for completeness. Two GIS datasets are created by the process: E911 address points, and building points with structure type and address attributes. Preliminary address and structure point data have been used by Department of Education to study school district consolidation issues, by DNR to locate structures within floodplains in need of flood insurance, and by HSEMD to assess damage from recent flooding along the Missouri River.

Example of Iowa Geocoding Project products – "rooftop" structure points shown as colored circles with building number in red. E911 driveway points show as yellow triangles. Background aerial photo is from FY2008 grant from Pooled Technology fund.



Geocoded counties (50) to be completed by January 1, 2012 in green. Yellow counties (15) are in progress, requiring additional QC and address validation. Pooled technology phase 2 funds ($194k) will be used to complete yellow areas and SE Iowa in 2012. Phase 3 funds ($255k) in this proposal will be used to finish the state (remaining areas in white).

Table 2 - State agencies needing geocoding services and address point data

State Agency	Number of addresses	Application	Notes	Support Governor's Strategic Plan and other initiatives
Public Defense	Varies: 100's to 1000's	Disaster response and critical infrastructure		3.3: Enhance capacities, response plans, training, and exercise opportunities for Iowa's emergency response personnel including the contribution of volunteer resources
Public Health	100,000+	Various –lead poisoning, critical infrastructure	$6000/yr commercial geocoding service – spends 8 weeks/yr to correct problems	
Human Services	2000-20,000/yr	Child care and foster care locations		
Human Services	500,000-600,000	Households receiving services		2.3: Develop system-wide capacity to serve individuals with co-occurring mental health and substance abuse disorders.
Human Services	100,000-150,000	Service providers (physicians, dentists, social workers)		3.3: Develop and implement policies and programs that among adults and youth 3.4: Increase access to immunizations for children 0-18 3.5: Improve the dental support system for all Iowans
Human Services	500,000 – 1,000,000	Medical patients receiving services		3.3: Develop and implement policies and programs that among adults and youth 3.4: Increase access to immunizations for children 0-18. 3.5: Improve the dental support system for all Iowans
Education	Varies – 1000+	District consolidation		
Education	3000	GED users	Spends 6 weeks to correct problems	1.4: Provide education and training programs that respond to the current and emerging workforce needs within the state and its geographic regions
Revenue	1,000,000	Property tax equalization		
Revenue	80,000	Sales tax in TIF districts		
Iowa Network Services	100+	Service locations and customers		
Transportation	3,000,000	Driver licenses		
Natural Resources	900,000	Hunting and fishing licenses		3.3:Help expand the development of outdoor recreation opportunities for Iowans
Cultural Affairs	100,000	Historic Building Inventory	50-70% accuracy using free products	3.2:Improve the availability and impact of programs including Cultural and Entertainment Districts, Great Places, Main Street Iowa, and Historic Preservation
Economic Development	100,000	Business locations, tourism sites, workforce demographics		1.1:Expand and enhance outreach efforts to Iowa businesses to clearly identify business workforce needs
Secretary of State	2,000,000	Registered Voters		
Public Safety	100,000	Crime mapping and sex offender registry	Would use building footprints for SWAT calls, about 200 per year	4.1: Prevent and investigate crimes of sexual exploitation of children by predators using the internet 4.2: Affect the incidence of sexual abuse of children through improved education, policies, and practices

Enclosure One, Financial Analysis Spreadsheet to Return on Investment (ROI)
Program Funding Application

Agency Name: Iowa DNR

Application Name: GIS Services to State Agencies 2 & Geocoding 3

Table One: Estimated Project Cost

	FY13	FY14	FY15	FY16	FY17	
Development/Implementation Costs	$100,000	$127,500	$127,500	$0	$0	Geocoding Phase 2 & 3
Recuring Costs	$120,000	$120,000	$120,000	$180,000	$180,000	GIS Services Phase 1 & 2
Total Costs	$220,000	**$247,500**	**$247,500**	$180,000	$180,000	

Table Two: Percentage of Costs From

General Fund						
Federal or other funding				100	100	
Pooled Technology Fund	100	100	100			

Table Three: Projected Reduction in Expense

For Requesting Agency	$3,000	$6,000	$9,000	$12,000	$12,000	
For Other State Agencies	$115,000	$230,000	$345,000	$460,000	$460,000	Benefits of GIS Services Only
TOTAL Cost Reductions	$118,000	$236,000	$354,000	$472,000	$472,000	Does not include Geocoding benefits

Table Four: Calculated Estimated Return on Investment

						Totals
Total projected cost from table one	$220,000	$247,500	$247,500	$180,000	$180,000	$1075000.
Total projected cost reductions, table 3	$118,000	$236,000	$354,000	$472,000	$472,000	$1652000.
Projected Net Benefit to Iowa	-$102,000	-$11,500	$106,500	$292,000	$292,000	$577000.